

LITHOGRAPHIC PROCESSING OPTIMIZATION BASED ON HYPERSAMPLED CORRELATIONS

ABSTRACT

A method of optimizing lithographic processing to achieve substrate uniformity, is presented herein. In one embodiment, The method includes deriving hyper-sampled correlation information indicative of photoresist behavior for a plurality of wafer substrates processed at pre-specified target processing conditions. The derivation includes micro-exposing subfields of the substrates with a pattern, processing the substrates at the various target conditions, determining photoresist-related characteristics of the subfields (e.g., Bossung curvatures), and extracting correlation information regarding the subfield characteristics and the different target processing conditions to relate the target conditions as a function of subfield characteristics. The method then detects non-uniformities in a micro-exposed subsequent substrate processed under production-level processing conditions and exploits the correlation information to adjust the production-level conditions and achieve uniformity across the substrate.